HAB HIV Performance Measures: Pediatrics

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Performance Measure: ARV Therapy	
Percentage of pediatric patients[1] with HIV infection who met age-specific eligibility criteria[2] but were <u>not</u> prescribed ARV therapy during the measurement year	
Numerator:	Number of HIV-infected pediatric patients who met the following age-specific eligibility criteria[2]: <12 mos. = All HIV-infected pediatric patients 1 to <5 yrs = AIDS or significant HIV-related symptoms; or CD4 <25% regardless of symptoms or HIV RNA level <u>≥</u>5 yrs = AIDS or significant HIV-related symptoms; or CD4<350 cells/mm^3
Denominator:	Number of HIV-infected pediatric patients who: • were not prescribed ARV therapy; and • had a medical visit with a provider with prescribing privileges[3] at least once in the measurement year
Patient Exclusions:	1. Patients newly enrolled in care during last four months of the measurement year
Data Elements:	1. Is the pediatric patient HIV-infected? (Y/N) a. If yes, was the patient seen by a provider with prescribing privileges during the measurement year? (Y/N) i. If yes, was the patient prescribed ARV therapy? (Y/N) 1. If no, did the patient meet the eligibility criteria for ARV therapy? (Y/N)
Data Sources:	• Electronic Medical Record/Electronic Health Record • CAREWare, Lab Tracker or other electronic data base • Medical record data abstraction by grantee of a sample of records • Billing records
National Goals, Targets, or Benchmarks for Comparison:	None available at this time
Outcome Measures for Consideration:	• Rate of opportunistic infections in the clinic population • Rate of HIV-related hospitalizations in the clinic population • HIV-related mortality rates
Basis for Selection:	
Recommendations for initiating therapy have been more aggressive in children than adults for several reasons: 1) HIV disease progression in children is more rapid than in adults; and 2) laboratory parameters are less predictive of risk of disease progression.[2] Because CD4 count and HIV RNA values and risk of disease progression vary considerably by age in children, recommendations for when to start therapy differs by age of	

the child. The measure reflects important aspects of care that significantly reduces morbidity and mortality. The measure has a strong evidence base supporting the use.
US Public Health Guidelines:
Working Group Recommendations (Table 2): "Initiation of antiretroviral therapy is recommended for infants aged <12 months, regardless of clinical status, CD4 percentage or viral load. Based on data showing that surrogate marker-based risk of progression varies considerably by age but that CD4 count-associated risk of progression in children age 5 years or older is similar to young adults, the Working Group has moved to recommendations for three age bands for initiation of treatment: infants under age 12 months, children age 1-<5 years, and children and adolescents ≥ 5 years."[2]
References/Notes:
[1] "Pediatric patients" includes all patients younger than 13 years. [2] Working Group on Antiretroviral Therapy and Medical Management of HIV-Infected Children. Guidelines for the Use of Antiretroviral Agents in Pediatric HIV Infection. February 23, 2009. Available at **http://aidsinfo.nih.gov/ContentFiles/PediatricGuidelines.pdf**. Accessed December 20, 2009, pp. 24-29. [3]A "provider with prescribing privileges" is a health care professional who is certified in his/her jurisdiction to prescribe medications.

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Performance Measure: CD4 Value	
Percentage of pediatric patients[1] with HIV infection who had at least three (3) CD4 values[2] performed in the measurement year	
Numerator:	Number of HIV-infected pediatric patients who had three or more CD4 values performed at least three months apart during the measurement year
Denominator:	Number of HIV-infected pediatric patients who had a medical visit with a provider with prescribing privileges[3] at least once in the measurement year
Patient Exclusions:	1. Pediatric patients with HIV infection newly enrolled in care during the last nine months of the measurement year
Data Elements:	1. Is the pediatric patient HIV-infected? (Y/N) a. If yes, was the patient seen by a provider with prescribing privileges during the measurement year? (Y/N) i. If yes, did the patient have three or more CD4 values performed during the measurement year? (Y/N) 1. If yes, list the dates the specimens were obtained.
Data Sources:	• Electronic Medical Record/Electronic Health Record • CAREWare, Lab Tracker or other electronic data base • Medical record data abstraction by grantee of a sample of records • Billing records
National Goals, Targets, or Benchmarks for Comparison:	None available at this time
Outcome Measures for Consideration:	• Rate of opportunistic infections in the clinic population • Rate of HIV-related mortality in the clinic population
Basis for Selection:	
The CD4 count and percentage decline as HIV infection progresses. Patients with lower CD4 values have poorer prognosis than patients with higher values. CD4 values should be monitored every 3-4 months with increased frequency if clinical, immunological or virologic deterioration is suspected.[4] The measure reflects important aspects of care that significantly impacts survival and mortality. Data collection is currently feasible and measure has a strong evidence base supporting the use.	
US Public Health Guidelines:	
"In HIV-infected children…the CD4 count and percentage decline as HIV infection progresses, and patients with lower CD4 values have a poorer prognosis than patients with higher values. CD4 values should be obtained as soon as possible after a child has a positive test for HIV and every 3–4 months thereafter. Increased frequency of evaluations may be needed for children with suspected clinical, immunologic, or	

virologic deterioration; to confirm an abnormal value; or when initiating or changing therapy. Because young infants with HIV infection may have rapid disease progression, some experts monitor CD4 percentage more frequently (e.g., every 1–2 months) in untreated infants less than age 6–12 months."[4]

References/Notes:

[1] "Pediatric patients" includes all patients younger than 13 years.
[2] "CD4 values" includes CD4 T-cell counts and CD4 percentages. CD4 percentages are recommended for children < 5 years of age and absolute CD4 counts for children ≥ 5 years of age.[4]
[3] A "provider with prescribing privileges" is a health care professional who is certified in his/her jurisdiction to prescribe medications.
[4] Working Group on Antiretroviral Therapy and Medical Management of HIV-Infected Children. Guidelines for the Use of Antiretroviral Agents in Pediatric HIV Infection. February 23, 2009. Available at **http://aidsinfo.nih.gov/ContentFiles/PediatricGuidelines.pdf**. Accessed December 20, 2009, pp. 13-17.

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Performance Measure: Developmental Surveillance	
Percentage of HIV- infected or exposed pediatric patients[1] who had developmental surveillance documented[2] in the measurement year	
Numerator:	Number of HIV-infected or exposed pediatric patients who had developmental surveillance documented in the measurement year
Denominator:	Number of HIV-infected or exposed pediatric patients who had a medical visit with provider with prescribing privileges[3] at least once in the measurement year
Patient Exclusions:	None
Data Elements:	1. Is the pediatric patient HIV-infected or exposed? (Y/N) a. If yes, was the patient seen by a provider with prescribing privileges during the measurement year? (Y/N) i. If yes, was developmental surveillance documented in the measurement year? 1. If yes, list the date.
Data Sources:	• Electronic Medical Record/Electronic Health Record • Medical record data abstraction by grantee of a sample of records • Billing records
National Goals, Targets, or Benchmarks for Comparison:	None available at this time
Outcome Measures for Consideration:	• Rate of developmental delays in clinic population • Rate of appropriate grade level in comparison to chronological age • Rate referrals for intervention for developmental or educational problems • Mean age of diagnosis of developmental problems

Basis for Selection:

Developmental delays in HIV- infected and exposed children are more prevalent than in the general population. One study showed that clinically and immunologically stable HIV-infected children had more frequent behavioral problems and lower developmental and cognitive scores than established childhood norms.[4]

Early identification of developmental disorders is critical to the well-being of children and their families. T he American Academy of Pediatrics' policy statement recommends screening tests be administered regularly at 9-, 18- and 30-month visits, and that developmental surveillance be performed at each medical care encounter.[5] Children diagnosed with developmental disorders should be identified as children with special health care needs and chronic-condition management should be initiated.

US Public Health Guidelines:
None
References/Notes:
[1] "Pediatric patients" includes all patients younger than 13 years. [2] Developmental surveillance should be age appropriate. For children ≤ 5 years, surveillance should focus on the four spheres of development: 1) fine motor skills; 2) gross motor skills; 3) language development; and 4) social skills. For children ≥ 5 years, surveillance should have an education focus. Developmental surveillance must be documented in the health record. If developmental delay is suspected, further examination with a validated developmental screening tool is indicated. [3]A "provider with prescribing privileges" is a health care professional who is certified in his/her jurisdiction to prescribe medications. [4] Nozyce, M. et al. A Behavioral and Cognitive Profile of Clinically Stable HIV-Infected Children. Pediatrics 2006;117: 763-770. [5] American Academy of Pediatrics. Identifying Infants and young children with developmental disorders in the medical home: An algorithm for development surveillance and screening. Pediatrics 2006; 118: 405-420.

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Performance Measure: Disclosure of HIV Status to Child

Percentage of pediatric/adolescent patients[1] with HIV infection for whom there is a documented discussion[2] about disclosure or who know their HIV status in the measurement year

Numerator:	Number of HIV-infected pediatric/adolescent patients for whom the provider and guardian had a documented discussion about disclosure or who know their status
Denominator:	Number of HIV-infected pediatric/adolescent patients who: • were ≥ 12 years old at the beginning of the measurement year, and • had a medical visit with a provider with prescribing privileges[3] at least once in the measurement year
Patient Exclusions:	None
Data Elements:	1. Is the pediatric/adolescent patient HIV-infected? (Y/N) a. If yes, is the child ≥ 12 years old? i. If yes, was the patient seen by a provider with prescribing privileges during the measurement year? (Y/N) 1. If yes, is there a documented discussion about disclosure or does the child know of his/her HIV status in the measurement year? a. If yes, list date.
Data Sources:	▪ Electronic Medical Record/Electronic Health Record ▪ Medical record data abstraction by grantee of a sample of records
National Goals, Targets, or Benchmarks for Comparison:	None available at this time
Outcome Measures for Consideration:	▪ Rate of undetectable viral load among children ≥ 12 years ▪ Proportion of adolescents who know their HIV status

Basis for Selection:

The American Academy of Pediatrics reaffirmed in 2009 a policy statement that strongly encourages disclosure to school-age HIV-infected children. Adolescents should know their HIV status and be fully informed regarding consequences for their health, including sexual behavior. The process for disclosure

should be discussed and planned with caregivers. Disclosure should be geared to the child's level of cognitive development and maturity.[4]

US Public Health Guidelines:

None

References/Notes:

[1] For purposes of this measure, "pediatric/adolescent patients" includes all children $\geq$ 12 years. While each adolescent matures at a different rate disclosure by 12 years of age is generally appropriate. [2] "Documented discussion" means that the provider or another member of the medical team has talked with the guardian and/or child about disclosure and the discussion is noted in the health record.
[3]A "provider with prescribing privileges" is a health care professional who is certified in his/her jurisdiction to prescribe medications.
[4]American Academy of Pediatrics (Reaffirmed 2009). Disclosure of illness status to children and adolescents with HIV infection. Pediatrics, 103(1); January 1999, pp. 164-166.

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Performance Measure: Guardianship	
Percentage of HIV- infected and exposed pediatric/adolescent patients[1] newly enrolled in care during the measurement year with guardianship documented[2] in health record	
Numerator:	Number of HIV- infected or exposed pediatric/adolescent patients who have guardianship documented in the health record in the measurement year
Denominator:	Number of HIV- infected or exposed pediatric/adolescent patients newly enrolled in care in an HIV care setting[3] in the measurement year
Patient Exclusions:	1. Pediatric/adolescent patients ≥ 18 years of age
Data Elements:	1. Is the pediatric/adolescent patient HIV-infected or exposed? (Y/N) a. If yes, was the patient newly enrolled in care in the measurement year? i. If yes, is there documentation of guardianship in the health record? 1. If yes, list the date
Data Sources:	• Electronic Medical Record/Electronic Health Record • Medical record data abstraction by grantee of a sample of records
National Goals, Targets, or Benchmarks for Comparison:	None available at this time
Outcome Measures for Consideration:	• Delay in access to care due to lack of documentation of guardianship
Basis for Selection:	
Study results from a nationally representative sample showed varying levels of guardianship planning. Of the 222 participants, only 28% had prepared legal documentation. Parents with the lowest CD4 counts and those living without other adults were more likely to have completed the guardianship planning process.[4]	
US Public Health Guidelines:	
None	
References/Notes:	

[1] For the purposes of this measure, "pediatric/adolescent patients" includes all patients <_18 years. Once the child reaches the age of 18 years, he/she is considered an adult.
[2]"Documented guardianship" refers to validation of the child's legal guardian through review of documents such as birth certificate, court documents, adoption proceedings, etc.
[3]An HIV care setting is one which received Ryan White HIV/AIDS Treatment Modernization Act of 2009

funding to provide HIV care and has a quality management program in place to monitor the quality of care addressing gaps in quality of HIV care.

[4]Cowgill, B., et al (2007). Guardianship planning among HIV-infected parents in the United States: Results from a nationally representative sample. Pediatrics; 119; e391-e398.

[5]Gardner, W. & Preator, K. (1996). Children of seropositive mothers in the U.S. AIDS epidemic. Journal of Social Issues. 52: 177-195.

[6]Dane BO, Levine C, eds (1994) AIDS and the New Orphans: Coping with Death. Westport, CT: Auburn House/Greenwood Publishing Group; 1994.

Performance Measure: Health Care Transition Planning for HIV-infected Youth	
Percentage of adolescents[1] with HIV infection who had a discussion about health care transition planning documented in the health record in the measurement year	
Numerator:	Number of HIV-infected adolescents who had a discussion about health care transition planning documented in the health record in measurement year
Denominator:	Number of HIV-infected adolescents who: • were ≥ 17 years old in the measurement year, and • had a medical visit with a provider with prescribing privileges[2] at least once in the measurement year
Patient Exclusions:	1. Adolescents who were newly diagnosed with HIV infection in the measurement year
Data Elements:	1. Is the adolescent HIV-infected? (Y/N) a. If yes, is the adolescent ≥ 17 years (Y/N) i. If yes, was the patient seen by a provider with prescribing privileges during the measurement year? (Y/N) 1. If yes, is a discussion about health care transition documented in the health record in the measurement year? (Y/N) a. If yes, list the date
Data Sources:	• Electronic Medical Record/Electronic Health Record • Medical record data abstraction by grantee of a sample of records
National Goals, Targets, or Benchmarks for Comparison:	None available at this time
Outcome Measures for Consideration:	• Retention in care after transition from pediatric/adolescent program to adult care • Rate of progression to AIDS
Basis for Selection:	
According to the Society for Adolescent Medicine, transitional health programs should be prepared to address common concerns of young people. Transition programs should be flexible enough to meet the needs of a wide range of young people. The transfer of care should be individualized to meet the specific needs of the young person and his/her family. Health care transition is most successful when there is a designated professional who, together with the patient and family, takes responsibility for the process. The Society for	

Adolescent Medicine has outlined six critical steps to ensuring successful transition to adult-oriented care.[3]

The American Academy of Pediatrics recommends creating a written health care transition plan by age 14 together with the young person and family.[4]

US Public Health Guidelines:

Adolescents may feel unfamiliar with the busier clinics typical of adult medical providers. Providing support and guidance to the adolescent and to the adult medical care provider as to what is expected from each may be helpful. [5]

References/Notes:

[1] Each adolescent matures at a different rate and impacts the timeframe when transition planning occurs. By 17 years of age, discussions about transition of health care to an adult program should have taken place. The age of 17 years is selected for performance measurement purposes only and should not be interpreted as a recommendation at which discussion should begin to occur. Providers are encouraged to have discussions about transition to an adult program before the adolescent reaches 17 years of age.

[2]A "provider with prescribing privileges" is a health care professional who is certified in his/her jurisdiction to prescribe medications.

[3]Society for Adolescent Medicine (2003). Transition to adult health care for adolescents and young adults with chronic conditions. Journal of Adolescent Health; 33:309-311.

[4]American Academy of Pediatrics (2002). A consensus statement on health care transitions for young adults with special health care needs. Pediatrics; 110: pp. 1304-1306.

[5] Working Group on Antiretroviral Therapy and Medical Management of HIV-Infected Children. Guidelines for the Use of Antiretroviral Agents in Pediatric HIV Infection. February 23, 2009. Available at http://aidsinfo.nih.gov/ContentFiles/PediatricGuidelines.pdf. Accessed December 20, 2009, pp. 64-65.

Performance Measure: HIV Diagnostic Testing of Exposed Infants	
Percentage of exposed infants[1] born to HIV-infected women who received recommended virologic diagnostic testing[2] for HIV infection in the measurement year	
Numerator:	Number of HIV-perinatally exposed infants who had at least two virologic diagnostic tests performed[2] by age of six months to definitively exclude HIV infection
Denominator:	Number of HIV-perinatally exposed infants who had a medical visit with a provider with prescribing privileges[3] at least once in the measurement year
Patient Exclusions:	1. Patients who were newly enrolled after six months of age
Data Elements:	1. Is the patient less than 12 months of age? (Y/N) a. Was the infant born to an HIV-infected woman? (Y/N) i. If yes, was the patient seen by a provider with prescribing privileges during the measurement year? (Y/N) 1. If yes, was the infant less than 6 months of age when enrolled? (Y/N) a. If yes, did the infant have documentation of receiving at least two virologic diagnostic tests at recommended time points[2]? (Y/N) i. If yes, list dates.
Data Sources:	• Electronic Medical Record/Electronic Health Record • CAREWare, Lab Tracker or other electronic data base • Medical record data abstraction by grantee of a sample of records • Billing records
National Goals, Targets, or Benchmarks for Comparison:	None available at this time
Outcome Measures for Consideration:	• Median age of diagnosis of HIV infection • Rate of opportunistic infections among clinic population
Basis for Selection:	
Antibiotic prophylaxis against PCP is recommended for infants with indeterminate HIV infection starting at 4-6 weeks of life or until they are determined to be uninfected. Diagnostic testing allows PCP prophylaxis to be avoided or stopped if confirmed uninfected.[4]	
US Public Health Guidelines: "HIV infection can be definitively diagnosed through the use of virologic assays in most nonbreastfed HIV-	

infected infants by age 1 month and in virtually all infected infants by age 4 months. Tests for antibodies to HIV, including newer rapid tests, do not establish the presence of HIV infection in infants because of transplacental transfer of maternal antibodies; therefore a virologic test should be utilized *[1]*. A positive virologic test (i.e., detection of HIV by culture or DNA polymerase chain reaction [PCR] or RNA assays) indicates likely HIV infection and should be confirmed by a repeat virologic test on a second specimen as soon as possible after the first test result becomes available. The use of the currently approved HIV p24 antigen assay is not recommended for infant diagnosis in the United States because the sensitivity and specificity of the assay in the first months of life are less than that of other HIV virologic tests.

Virologic diagnostic testing of the HIV-exposed infant should be performed at 14–21 days of age, at age 1–2 months, and at age 4–6 months. Some experts also perform virologic diagnostic testing at birth because as many as 30%–40% of infants with HIV infection can be identified by 48 hours of age. HIV infection is diagnosed by two positive HIV virologic tests performed on separate blood samples, regardless of age. A positive HIV antibody test with confirmatory Western blot (or IFA) at age ≥18 months confirms HIV infection."[4]

Definitive exclusion of HIV infection in a nonbreastfed infant is based on two or more negative virologic tests, with one obtained at age ≥1 month and one at ≥4 months, or two negative HIV antibody tests from separate specimens obtained at age ≥6 months.

References/Notes:

[1] "Infants" includes all patients 12 months and younger.
[2] Virologic diagnostic tests include HIV DNA PCR, HIV RNA assays or HIV viral culture. Virologic diagnostic testing of the HIV-exposed infant should be performed at 14–21 days of age, at age 1–2 months, and at age 4–6 months. *Definitive* exclusion of HIV infection in a nonbreastfed infant is based on two or more negative virologic tests, with one obtained at age ≥1 month and one at ≥4 months, or two negative HIV antibody tests from separate specimens obtained at age ≥6 months.
[3] A "provider with prescribing privileges" is a health care professional who is certified in his/her jurisdiction to prescribe medications.
[4] Working Group on Antiretroviral Therapy and Medical Management of HIV-Infected Children. Guidelines for the Use of Antiretroviral Agents in Pediatric HIV Infection. February 23, 2009; pp 1-139. Available at **http://aidsinfo.nih.gov/ContentFiles/PediatricGuidelines.pdf**. Accessed December 20, 2009, pp. 7-10.

Performance Measure: Medical Visit	
Percentage of pediatric patients[1] with HIV infection who had three or more medical visits in an HIV care setting in the measurement year	
Numerator:	Number of HIV-infected pediatric patients who had a medical visit with a provider with prescribing privileges[2] in an HIV care setting[3] three or more times at least three months apart in the measurement year
Denominator:	Number of HIV-infected pediatric patients who had a medical visit with a provider with prescribing privileges in an HIV care setting at least once in the last two (2) years
Patient Exclusions:	1. Pediatric patients newly diagnosed with HIV infection and enrolled in care during the last nine months of the measurement year
Data Elements:	1. Is the pediatric patient HIV-infected? (Y/N) a. If yes, was the patient seen by a provider with prescribing privileges at least once in an HIV care setting the last 2 years? i. If yes, did the patient have at least three medical visits at least three months apart in the measurement year? (Y/N) 1. If yes, list the dates of these visits.
Data Sources:	• Ryan White Services Report • Electronic Medical Record/Electronic Health Record • CAREWare, Lab Tracker or other electronic data base • Medical record data abstraction by grantee of a sample of records • Billing records
National Goals, Targets, or Benchmarks for Comparison:	None available at this time [Still need to get HIVRAN data]
Outcome Measures for Consideration:	• Rate of opportunistic infections in the clinic population • Rate of HIV-related mortality in the clinic population • Rate of severe immunosuppression • Rate of viral load suppression
Basis for Selection:	
The CD4 count and percentage decline as HIV infection progresses. Patients with lower CD4 values have poorer prognosis than patients with higher values. CD4 values should be monitored every 3-4 months with increased frequency if clinical, immunological or virologic deterioration is suspected. Because of the risk for rapid immunologic and clinical progression, initiation of antiretroviral treatment is recommended for all HIV-infected infants under age 12 months.[4] Measure reflects important aspects of care that significantly impacts mortality. Data collection is currently feasible and measure has a strong evidence base supporting the use.	

US Public Health Guidelines:
Children should have a monitoring visit at least every 3-4 months to assess both efficacy and potential toxicity of antiretroviral regimens.[4]
References/Notes:
[1] "Pediatric patients" includes all patients younger than 13 years. [2]A "provider with prescribing privileges" is a health care professional who is certified in his/her jurisdiction to prescribe medications. [3]An HIV care setting is one which received Ryan White HIV/AIDS Treatment Modernization Act of 2009 funding to provide HIV care and has a quality management program in place to monitor the quality f care addressing gaps in quality of HIV care. [4]Working Group on Antiretroviral Therapy and Medical Management of HIV-Infected Children. Guidelines for the Use of Antiretroviral Agents in Pediatric HIV Infection. February 23, 2009; pp 1-139. Available at **http://aidsinfo.nih.gov/ContentFiles/PediatricGuidelines.pdf**. Accessed December 20, 2009, pp.13-15; 61-62.

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Performance Measure: MMR Vaccination	
Percentage of pediatric patients[1] with HIV infection who have had at least one dose of Measles, Mumps & Rubella (MMR) vaccine administered between 12-24 months of age	
Numerator:	Number of HIV-infected pediatric patients who had at least one dose of MMR given between 12-24 months of age
Denominator:	Number of HIV-infected pediatric patients ≥ 2 years and ≤ 4 years of age who had a medical visit with a provider with prescribing privileges[2] at least once in the measurement year
Patient Exclusions:	1. Pediatric patients with CD4 <15% between 12-24 months of age 2. Pediatric patients newly enrolled after 2 yrs of age
Data Elements:	1. Is the pediatric patient HIV-infected? (Y/N) a. If yes, was the patient ≥ 2 years and ≤ 4 years of age at any time in the measurement year? i. If yes, was the patient seen by a provider with prescribing privileges during the measurement year? (Y/N) 1. If yes, did the patient receive one dose of MMR vaccine between 12-24 months of age? a. If yes, list the date
Data Sources:	• Electronic Medical Record/Electronic Health Record • CAREWare, Lab Tracker or other electronic data base • Medical record data abstraction by grantee of a sample of records • Billing records
National Goals, Targets, or Benchmarks for Comparison:	Healthy People 2010[3] goal: 90% for individual vaccines National Immunization Survey[4] 2004: 93.0% | 2005: 91.5% | 2006: 92.3% | 2007: 92.3% | 2008: 92.1% [Note: The NIS estimates vaccination coverage among children 19-35 months and is not specific to HIV disease].
Outcome Measures for Consideration:	• Rate of measles in the clinic population • Rate of mumps in the clinic population • Rate of rubella in the clinic population • Rate of MMR vaccine coverage in the clinic population
Basis for Selection:	
Vaccines are an effective primary prevention tool and HIV-infected children should be protected from vaccine-preventable diseases. Children with HIV infection are at higher risk than immunocompetent children for complications of varicella, herpes zoster and measles. MMR is recommended for all asymptomatic and symptomatic HIV-infected children who are not severely immunocompromised and who lack evidence of	

measles immunity.[5]

The National Immunization Survey notes that while many of the individual vaccine rates meet or exceed the goals set by Healthy People 201, children living below poverty had lower coverage than children living at or above poverty for most vaccines. Sustaining high coverage levels and using effective methods of reducing disparities across states/local areas and income groups remains a priority to fully protect children and limit the incidence of vaccine-preventable diseases.[4]

The measure reflects important aspects of care that significantly impacts mortality.

US Public Health Guidelines:

MMR vaccine is recommended for all asymptomatic HIV-infected persons who are not severely immunosuppressed and who lack evidence of measles immunity. MMR vaccination of symptomatic HIV-infected persons should be considered if they: a) do not have evidence of severe immunosuppression (CD4<15%) and; b) lack evidence of measles immunity.[5]

References/Notes:

[1] "Pediatric patient" includes all patients younger than 13 years.
[2]A "provider with prescribing privileges" is a health care professional who is certified in his/her jurisdiction to prescribe medications.
[3] US Department of Health and Human Services (2000) Healthy People 2010. (http://www.healthypeople.gov/Document/HTML/Volume1/14Immunization.htm#_Toc494510240) Accessed February 10, 2010.
[4]Centers for Disease Control & Prevention. National, state, and local area vaccination coverage among children aged 19-35 months—United States, 2008. MMWR; Aug 28, 2009: 58(33); 921-926. (http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5833a3.htm?s_cid=mm5833a3_e) Accessed February 10, 2010.
[5]Centers for Disease Control and Prevention. Guidelines for the Prevention and Treatment of Opportunistic Infections Among HIV-Exposed and HIV-Infected Children. MMWR 2009;58(No. RR-11). http://aidsinfo.nih.gov/contentfiles/Pediatric_OI.pdf Accessed February 10, 2010, pp.161-163.

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Performance Measure: Neonatal Zidovudine Prophylaxis	
Percentage of infants[1] born to HIV-infected women who were prescribed ZDV prophylaxis[2] for HIV within 48 hours of birth during the measurement year	
Numerator:	Number of infants born to HIV-infected women who were prescribed ZDV prophylaxis within 48 hours of birth during the measurement year
Denominator:	Number of infants born to HIV-infected women during the measurement year
Patient Exclusions:	1. Patients not enrolled in care site within 48 hours of birth
Data Elements:	1. Was the infant born to an HIV-infected woman? (Y/N) a. If yes, was the infant seen by a provider with prescribing privileges within 48 hours of birth? i. If yes, was ZDV prophylaxis initiated within 48 hours of birth during the measurement year? (Y/N) 1. If yes, list the date.
Data Sources:	• Electronic Medical Record/Electronic Health Record • CAREWare, Lab Tracker or other electronic data base • Medical record data abstraction by grantee of a sample of records • Billing records
National Goals, Targets, or Benchmarks for Comparison:	None available at this time
Outcome Measures for Consideration:	• Rate of perinatal transmission
Basis for Selection:	
PACTG 076 demonstrated that administration of ZDV to the pregnant woman and her infant could reduce the risk of perinatal transmission by nearly 70%. Perinatal HIV transmission can occur at low or undetectable HIV RNA levels. All HIV-exposed infants should receive postpartum antiretroviral drugs to reduce perinatal HIV transmission. The 6-week neonatal ZDV chemoprophylaxis regimen is recommend for all HIV-exposed infants.[3] The measure reflects important aspects of care that significantly impacts mortality. The measure has a strong evidence base supporting the use.	
US Public Health Guidelines:	

"The 6-week neonatal component of the ZDV chemoprophylaxis regimen is recommended for all HIV-exposed neonates to reduce perinatal HIV transmission. ZDV should be initiated as close to the time of birth as possible, preferably within 6 to 12 hours of delivery."[4]
References/Notes:
[1] "Infants" includes all patients aged 12 months and younger. [2]The 6-week ZDV prophylaxis regimen is recommended at gestational age-appropriate doses; ZDV should be dosed differently for premature infants <35 weeks than for infants ≥35 weeks as outlined by the Public Health Service Task Force. [3]Perinatal HIV Guidelines Working Group. Public Health Service Task Force Recommendations for Use of Antiretroviral Drugs in Pregnant HIV-Infected Women for Maternal Health and Interventions to Reduce Perinatal HIV Transmission in the United States. April 29, 2009. Available at: http://aidsinfo.nih.gov/contentfiles/PerinatalGL.pdf. Accessed December 17, 2009.

Performance Measure: PCP Prophylaxis for HIV-Exposed Infants	
Percentage of eligible infants[1] with HIV-exposure who were prescribed PCP prophylaxis in the measurement year	
Numerator:	Number of HIV-exposed infants who were prescribed PCP prophylaxis during the measurement year
Denominator:	Number of: • HIV-exposed infants in whom HIV infection has not been presumptively or definitively excluded[2] by 6 weeks of age AND • had a medical visit with a provider with prescribing privileges[3] at least once in the measurement year
Patient Exclusions:	None
Data Elements:	1. Is the infant HIV-exposed (born to an HIV-infected woman)? (Y/N) a. If yes, is the infant ≥ 6 weeks of age? i. If yes, has HIV been presumptively or definitively excluded? 1. If no, was the infant seen by a provider with prescribing privileges in the last year? a. If yes, was the pediatric patient prescribed PCP prophylaxis during the measurement year? (Y/N) i. If yes, list the date
Data Sources:	• Electronic Medical Record/Electronic Health Record • CAREWare, Lab Tracker or other electronic data base • Medical record data abstraction by grantee of a sample of records • Billing records
National Goals, Targets, or Benchmarks for Comparison:	None available at this time
Outcome Measures for Consideration:	• Rate of PCP in the clinic population • HIV-related mortality rates
Basis for Selection:	
"PCP remains a common AIDS-indicator disease among HIV-infected infants and children. The highest incidence of PCP in HIV-infected children is in the first year of life, with cases peaking at age 3–6 months.	

The single most important factor in susceptibility of HIV-infected children of all ages to PCP is the status of cell mediated immunity of the host."[2]

The measure reflects important aspect of care that significantly impacts survival and mortality. Data collection is currently feasible and measure has a strong evidence base supporting the use.

US Public Health Guidelines:

"Chemoprophylaxis is highly effective in preventing PCP. Criteria for its use are based on the patient's age and CD4 count or percentage. Prophylaxis is recommended for all HIV-infected children aged >6 years who have CD4 counts <200 cells/mm^3 or CD4 <15%, for children aged 1–5 years with CD4 counts of <500 cells/mm^3 or CD4 <15%, and for all HIV-infected infants aged <12 months regardless of CD4 count or percentage. Infants born to HIV-infected mothers should be considered for prophylaxis beginning at 4–6 weeks of age. HIV-infected infants should be administered prophylaxis until 1 year of age, at which time they should be reassessed on the basis of the age-specific CD4 count or percentage thresholds mentioned above. Infants with indeterminate HIV infection status should receive prophylaxis until they are determined to be HIV-uninfected or presumptively uninfected with HIV. Prophylaxis is not recommended for infants who meet criteria for definitively or presumptively HIV-uninfected."[2]

References/Notes:

[1] "Infants" includes all patients 12 months of age or younger.

[2]Centers for Disease Control and Prevention. Guidelines for the Prevention and Treatment of Opportunistic Infections Among HIV-Exposed and HIV-Infected Children. MMWR 2009;58(No. RR-11). http://aidsinfo.nih.gov/contentfiles/Pediatric_OI.pdf Accessed January 29, 2010, pp. 45-48; 68-69. In nonbreast-feeding infants with no positive HIV virologic test results, presumptive exclusion of HIV infection can be based on two negative virologic test results: one obtained at >2 weeks and one obtained at >4 weeks of age…Definitive exclusion of HIV infection is based on two negative virologic test results: one obtained at >1 month of age and one obtained at >4 months of age…For both presumptive and definitive exclusion of infection, the child should have no other laboratory (e.g., no positive virologic test results) or clinical (e.g., no AIDS-defining conditions) evidence of HIV infection.

[3]A "provider with prescribing privileges" is a health care professional who is certified in his/her jurisdiction to prescribe medications.

Performance Measure: PCP Prophylaxis for HIV-Infected Children	
Percentage of eligible infants and children[1] with HIV infection who were prescribed PCP prophylaxis in the measurement year	
Numerator:	Number of HIV-infected infants or children who were prescribed PCP prophylaxis during the measurement year
Denominator:	Number of: • HIV-infected infants or children ≥ 6 weeks of age who meet the following age-specific eligibility criteria[2]: <12 months = All HIV-infected infants regardless of CD4 count 1-5 yrs = CD4<500 cells/mm^3 or CD4%<15% ≥6 yrs = CD4<200 cells/mm^3 or CD4%<15% AND • had a medical visit with a provider with prescribing privileges[3] at least once in the measurement year
Patient Exclusions:	None
Data Elements:	1. Is the infant or child HIV-infected? (Y/N) a. If yes, is the infant or child ≥ 6 weeks of age? i. If yes, did the infant or child meet the age-specific eligibility criteria? 1. If yes, was the infant or child seen by a provider with prescribing privileges in the last year? a. If yes, was the infant or child prescribed PCP prophylaxis during the measurement year? (Y/N) i. If yes, list the date.
Data Sources:	• Electronic Medical Record/Electronic Health Record • CAREWare, Lab Tracker or other electronic data base • Medical record data abstraction by grantee of a sample of records • Billing records
National Goals, Targets, or Benchmarks for Comparison:	None available at this time

Outcome Measures for Consideration:	• Rate of PCP in the clinic population • HIV-related mortality rates

Basis for Selection:

"PCP remains a common AIDS-indicator disease among HIV-infected infants and children. The highest incidence of PCP in HIV-infected children is in the first year of life, with cases peaking at age 3–6 months. The single most important factor in susceptibility of HIV-infected children of all ages to PCP is the status of cell mediated immunity of the host."[2]

The measure reflects important aspect of care that significantly impacts survival and mortality. Data collection is currently feasible and measure has a strong evidence base supporting the use.

US Public Health Guidelines:

"Chemoprophylaxis is highly effective in preventing PCP. Criteria for its use are based on the patient's age and CD4 count or percentage. Prophylaxis is recommended for all HIV-infected children aged >6 years who have CD4 counts <200 cells/mm^3 or CD4 <15%, for children aged 1–5 years with CD4 counts of <500 cells/mm^3 or CD4 <15%, and for all HIV-infected infants aged <12 months regardless of CD4 count or percentage. Infants born to HIV-infected mothers should be considered for prophylaxis beginning at 4–6 weeks of age. HIV-infected infants should be administered prophylaxis until 1 year of age, at which time they should be reassessed on the basis of the age-specific CD4 count or percentage thresholds mentioned above. Infants with indeterminate HIV infection status should receive prophylaxis until they are determined to be HIV-uninfected or presumptively uninfected with HIV. Prophylaxis is not recommended for infants who meet criteria for definitively or presumptively HIV-uninfected."[2]

References/Notes:

[1] "Children" includes all patients younger than 13 years; "infants" are those children 12 months of age or younger.

[2]Centers for Disease Control and Prevention. Guidelines for the Prevention and Treatment of Opportunistic Infections Among HIV-Exposed and HIV-Infected Children. MMWR 2009;58(No. RR-11). http://aidsinfo.nih.gov/contentfiles/Pediatric_OI.pdf Accessed January 29, 2010, pp. 45-48; 68-69.

[3]A "provider with prescribing privileges" is a health care professional who is certified in his/her jurisdiction to prescribe medications.

Performance Measure: Resistance Testing	
Percentage of pediatric patients[1] with HIV infection who had a resistance test performed[2] before initiation of ARV therapy if therapy started during the measurement year	
Numerator:	Number of HIV-infected pediatric patients who had a resistance test performed before initiation of ARV therapy
Denominator:	Number of HIV-infected pediatric patients who: • initiated ARV therapy during the measurement year; and • had a medical visit with a provider with prescribing privileges[3] at least once in the measurement year
Patient Exclusions:	None
Data Elements:	1. Is the pediatric patient HIV-infected? (Y/N) a. If yes, was the patient seen by a provider with prescribing privileges during the measurement year? (Y/N) i. If yes, was ARV therapy initiated during the measurement year? (Y/N) 1. If yes, was a resistance test performed before initiation of ARV therapy? (Y/N) a. If yes, list date.
Data Sources:	• Electronic Medical Record/Electronic Health Record • CAREWare, Lab Tracker or other electronic data base • Medical record data abstraction by grantee of a sample of records • Billing records
National Goals, Targets, or Benchmarks for Comparison:	None available at this time
Outcome Measures for Consideration:	• Percent of undetectable viral loads among pediatric patients on initial ARV in the clinic population • Percent of pediatric clients failing initial ARV regimen
Basis for Selection:	
Mutations in HIV RNA readily arise during viral replication. Ongoing replication in the presence of ARV drugs progressively selects for strains of HIV with mutations that result in drug resistance. Resistance testing is recommended prior to initiation of therapy in all treatment-naïve children.[4] The measure reflects important aspect of care that significantly impacts survival and mortality. The measure	

has a strong evidence base supporting the use.

US Public Health Guidelines:

"Mother-to-child transmission and horizontal transmission of drug-resistant HIV strains have been well documented and are associated with suboptimal virologic response to initial antiretroviral therapy. Drug-resistant variants of HIV may persist for months after birth in infected infants and impair the response to antiretroviral therapy. Consequently, antiretroviral drug-resistance testing is recommended prior to initiation of therapy in all treatment-naïve children." [4]

References/Notes:

[1] "Pediatric patients" includes all patients younger than 13 years.

[2]Resistance testing may occur either during or prior to the measurement year, as long as it is performed before ARV therapy is initiated.

[3]A "provider with prescribing privileges" is a health care professional who is certified in his/her jurisdiction to prescribe medications.

[4]Working Group on Antiretroviral Therapy and Medical Management of HIV-Infected Children. Guidelines for the Use of Antiretroviral Agents in Pediatric HIV Infection. February 23, 2009; pp 1-139. Available at **http://aidsinfo.nih.gov/ContentFiles/PediatricGuidelines.pdf**. Accessed December 20, 2009, pp. 102-104.